REMARKS

Favorable reconsideration of this application is respectfully requested in light of the following remarks, wherein Claims 1 and 6 are amended and new Claims 11 and 12 are added to the application. Currently, Claims 1-12 are pending in the present application.

As an initial matter, Applicants express gratitude to Examiner Nguyen for the courtesies granted to Applicants' attorney during the recent interview. During the interview, certain amendments to Claims 1 and 6 were discussed. The Examiner agreed that the amendments appeared to define Claims 1 and 6 over the art of record. As such, Applicants have amended Claims 1 and 6 consistent with that agreement.

Claims 1, 3, 6, and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,055,042 to *Sarangapani* in view of U.S. Patent No. 6,642,839 to *Gunderson et al.* Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,055,042 to *Sarangapani* and *Gunderson et al.*, and further in view of WO 02/030792. Claims 4-5 and 8-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,055,042 to *Sarangapani* and *Gunderson et al.*, and further in view of U.S. Patent No. 6,393,362 to *Burns*. However, none of the art of record discloses these patentable features.

Independent Claim 1 defines a method of preventing a mine vehicle from colliding, the mine vehicle comprising at least a movable carrier that is driven in a first movement direction and in a second movement direction, at least one scanner, and a control system including at least a first control unit arranged on the carrier; the method comprising determining for the mine vehicle at least one safe area provided within an area between minimum distances and maximum distances determined with respect to the vehicle ; scanning the environment in front of the

vehicle when driving the vehicle in one movement direction; carrying out a first collision examination wherein the safe area in front of the vehicle is monitored, and issuing a collision warning message if an obstacle is detected within the safe area , determining also at least one sideward safe area for the vehicle, determining an obstacle-free route on the basis of scanning results, and determining points in a sideward direction of the vehicle to restrict the route; forming memory points on the basis of coordinates of the points restricting the route, and storing the memory points in the control system and carrying out a second collision examination wherein at least one sideward safe area of the vehicle is monitored, and issuing a collision warning message if even one of the memory points resides within the safe area being monitored.

Independent Claim 6 defines a mine vehicle comprising at least a movable carrier that is driven in a first movement direction and in a second movement direction, at least one scanner, a control system including at least a first control unit arranged on the carrier; and wherein at least one scanner is configured to scan the environment in front of the vehicle in order to detect obstacles; at least one safe area defined by minimum distances and maximum distances determined with respect to the vehicle is determined in the control system; and which control system is configured to monitor scanning results and to issue a collision warning message if an obstacle is detected within the safe area in front of the vehicle, and wherein in the control system, at least one safe area in a sideward direction of the vehicle is further determined, the control system allows several memory points including their position information to be stored therein the memory points defining sideward points of the route and based on the scanning results, and the control system is configured to monitor at least one sideward safe area of the

vehicle and to issue a collision warning message if even one of the memory points resides within the safe area being monitored.

Independent Claims 1 and 6 are amended to further define that the at least one sideward safe area is determined on the basis of the _forward_ scanning results. New independent Claims 1 and 12 also include these features. Applicants submit that none of the art of record, in combination or alone, disclose the patentable features of independent Claims 1, 6, 11 and 12.

In contrast, _Sarangapani_ discloses a mine vehicle provided with a near and far range sensor system for detecting obstacles in the path of the vehicle, as is mentioned on column 2, lines 5 and 6, and in independent claims 1 and 19. The Examiner concedes that _Sarangapani_ fails to disclose, in addition to other features, the steps of determining also at least one sideward safe area of the vehicle, determining an obstacle-free route on the basis of scanning results, and determining points in a sideward direction of the vehicle to restrict the route; forming memory points on the basis of coordinates of the points restricting the route, and storing the memory points in the control system; and carrying out a second collision examination wherein at least one sideward safe area of the vehicle is monitored. The Examiner seeks to rely upon _Gunderson et al._ for disclosing these features. However, _Gunderson et al._ is deficient for disclosing these features.

Gunderson et al. discloses a collision avoidance system including a plurality of sensors arranged around a vehicle so that the system detects objects about a vehicle. A plurality of sensors may be arranged so that forward detection, rearward detection, sideward detection, under wheel detection and the like are obtained, column 9, lines 20-23 and column 14, lines 40-45 of _Gunderson et al._ Thus, in _Gunderson et al._, the main idea is to allow the user of the vehicle to

add or remove sensors as required for their particular application. See column 2, lines 35-37 of *Gunderson et al.*

Further, in Figures 6-12, it is clearly shown that if any sideward detection of obstacles is needed, one or more sideward sensor (600, 700, 780, 782, 900, 980, 982) is arranged on the left and right side of the vehicle (50). In column 6, line 66 to column 7, line 4, it is mentioned that a multiple sensors are used for monitoring areas around the vehicle so that the driver will detect hazards in any location around the vehicle.

Thereby, it is very clear that Gunderson teaches to use a great number of sensors and to arrange them freely in the vehicle at locations where obstacle detection is needed. Thus, if any sideward collision detection is needed, then based on the teaching of Gunderson, one or more sensors are arranged on the sides of the vehicle. It would therefore be against the teaching of Gunderson to use the forward direction scanning results when carrying out a sideward collision examination. Since an unlimited number of sensors can be arranged in the vehicle, and since the forward direction scanning results are not used for the sideward collision examination, there is no need to form any memory points as is defined in the present application.

In contrast, the present invention presents a solution to a problem when a mining vehicle can be provided only with a limited number of sensors and due to this fact blind areas are left around the vehicle. See paragraph [0003] of the present application. Further, paragraph [0008] of the present application describes that these blind spots can be monitored even if the number of sensors is limited.

The aim of the present invention is obtained by the features of determining an obstacle-free route on the basis of the forward scanning results, determining points in a sideward direction

to restrict the route, and forming memory points on the basis of coordinates of the points

restricting the route. Thus, since the scanning is made only in the forward direction,

obstacle-free route has to be determined and memory points formed, as is claimed. Accordingly,

neither *Sarangapani* nor *Gunderson et al.*, disclose the patentable features of independent Claims

1, 6, 11 and 12.

For at least the foregoing reasons, the method and device of independent Claims 1, 6, 11

and 12, and the claims depending therefrom, are patentable over the combined documents.

Accordingly, withdrawal of the rejections of record and allowance of this application are
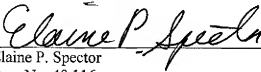
earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner

believe a telephone conference would be helpful in resolving any remaining issues pertaining to

this application, it is respectfully requested that the undersigned be contacted at the number

indicated below.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby

authorized by this paper to charge any additional fees during the entire pendency of this

application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required,

including any required extension of time fees, or credit any overpayment to Deposit

Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR

EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

Date: October 20, 2008   By: *Elaine P. Spector*

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